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Author(s): Phillips Barry

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# GREEK MUSIC

By PHILLIPS BARRY

THE materials for a study of ancient Greek music are of two sorts, documentary and archæological.

We have, in turn, two kinds of documentary material. There are, first, a host of incidental references to music and musicians scattered through the literature of the classic and post-classic periods. Secondly, there is a large body of purely technical writings, which we shall here collectively designate as the Musicography. The oldest of these is the so-called *Pseudo-Aristotle*,—a collection of students' minutes of academic discussions relating to the theory and practice of music. Much of the matter is interesting and valuable,—not a little of it quite indispensable. Next in importance, and scarcely less useful, are the treatises of the voluminous philosopher Aristoxenus, surnamed the *Musician* (c. 300 B. C.). We have from his pen but two extant works, the *Principles of Melodics* in one book, for beginners, and the *Elements of Melodics*, in two books, written for more advanced students. Much Aristoxenean material, however, has come down to us in excerpts, preserved in Plutarch's *Essay on Music*, and in the handbooks of Aristides, Cleonides, and others. The short handbook ascribed to a certain Alypius renders indispensable aid in understanding and deciphering the Greek method of musical notation.

The archæological material is likewise of two kinds. We have a few specimens of ancient musical instruments, and many more representations in sculpture and painting of instruments and performers. Yet these are of little more than insignificant value, as compared with the few scores of musical compositions which have come down to us. These are but four, in all,—the *Aidin Epitaph*, published by Ramsay in 1883, and first correctly interpreted musically by Munro in 1894,—the *Ashmunen Papyrus*, a fragment of the lost score of the *Orestes* of Euripides,—and two *Ritual Hymns*, discovered at Delphi by Homolle in 1893. Only the *Aidin Epitaph* is unmutilated. That so little should have survived of the music of the Greeks, beside so much of their poetry, might seem almost incomprehensible. Yet there was a very real reason for it. Not until late in the post-classic period,—certainly, not before the year 279 B. C., had the Greeks devised a convenient

and serviceable method of notation. Scores were few and far between,—Greek music perished for the simple reason that it was not, so to speak, published. Yet small as our *corpus* is, we cannot be too thankful for it,—in fact, without its aid, a study of Greek music would be a fruitless task.

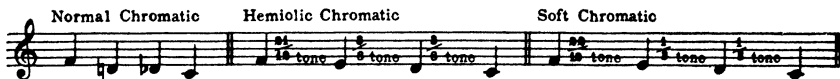
### STRUCTURAL BASIS OF GREEK MUSIC

Reduced to its lowest terms, the structural basis of all Greek music was the consonance of the *fourth*,—hence the tetrachord was defined as the bed-rock of musical composition. In theory, of course, the possible forms of the tetrachord were infinite, yet in practice, their number was limited to certain recognised differences of *genus*, *shade* and *species*. This limitation was based on the usage of musicians. Aristoxenus, therefore, classified as *diatonic* every tetrachord containing not more than one semitone, as *enharmonic* the form admitting quarter-tones, and all others as *chromatic*. Such were the *genera*, each with its variations of *shade*. These differences may be illustrated by means of a diagram:

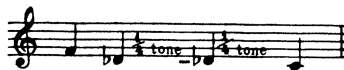
#### *Diatonic:*



#### *Chromatic:*



#### *Enharmonic:*



By transposition of the order of the intervals within a particular genus, the variations of *figure* or *species* were effected.

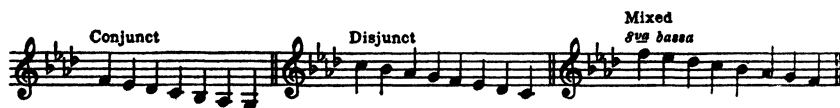


The melodic sequence of every ancient composition could be reduced to these forms, used either singly, or in a variety of combinations.

Every possible scale was analysed as made up of tetrachords, or parts of tetrachords, combined according to certain well-recognised and universally applied rules. Let us take a tetrachord of the first diatonic species:



If two of these were so combined that a common note served as the highest tone of the lower tetrachord, and the lowest of the upper, the resulting scale was *conjunct*, having the range of a minor seventh. Yet if the interval of a tone separated the two tetrachords, the scale was then defined as *disjunct*, because of the presence of the tone of disjunction. If, however, the conjunct scale were extended to the compass of an octave, by adding the interval of a tone at its base, the scale became of the *mixed* or alternating form. Or, as represented in modern notation:



The tetrachordal structure, as here briefly outlined, is even of more significance than the absence of harmony and counterpoint as a characteristic evidence of the difference between ancient Greek music, and the music of our own time. If, for example, we think of the structural basis of our music in terms of the tonic chord, we infer that this chord shall be in its fundamental position. To think of Greek music in terms of the tonic chord, however, requires of us also that we imagine the chord in its second inversion.

### THE PRIMARY MODES

The Greeks recognised three primary modes of music, Dorian, Phrygian and Lydian, the tonal sequences of which were as given in the diagram:



From the Greek point of view, these diatonic scales might be analysed as composed of tetrachords, respectively, of the first,

third and second species, arranged in the disjunct order. It is also possible for us, disposed as we are to think in terms of harmonic possibilities, to define them according to the structure of their tonic and dominant chords. The Dorian has a minor third in both, the Lydian a major third in both, while the Phrygian has a major third in the tonic and a minor third in the dominant chord. Such an analysis devolves at once upon the Greek interpretation of a certain tone as the *tonic* of the scale.

In the course of a most suggestive and illuminating discussion of the tonal structure of the Dorian, the first of the primary modes, as represented by the scale of the lyre in standard tune, the Pseudo-Aristotle clearly shows that the fourth of the scale, the tone rendered by the middle finger string of the lyre, was the tonic. Every Greek boy who learned to play the lyre in school, knew that the condition of being in tune was for any note of the scale governed by its relation to the tone of this middle finger string. That is, if the middle finger string were out of tune, every other note of the scale, by reason of the fact that the very condition of its being in tune at all was lost, was felt to be out of tune. Yet if any other string were out of tune, while the middle finger string was at true pitch, that string which was out of tune was the only one felt to render a false note. One could not wish for a better exposition of the principle of tonality, which we now recognise to be the principle which requires that every note of a modal scale be felt as "something at a certain distance from, with a certain relation to another tone," that is, the fundamental or tonic.

The fourth of the scale then, was, for the primary modes, the tonic, so that the lowest tone of the octave was the inferior dominant. Another fundamental principle of composition was that on this inferior dominant, every melody cast in a primary mode should come to a close. We have illustrations of this usage in our *corpus* of Greek melody, showing the cadences in the Dorian, Phrygian and Lydian:

#### *Dorian Mode:*

##### *Ritual Hymn A*



*Phrygian Mode:**Lydian Mode:*

This rule of cadence structure was inviolate, and formed a criterion for the genuine. That is to say, the violation of it in seven melodies hitherto supposed to be Greek, since they are transcribed in the Greek notation, renders final proof that these melodies are not authentic, but are forgeries by persons who were quite unacquainted with the grounds and rules of Greek music, as we know them from the unanimous testimony of the musicography and the four unimpeachable scores.

In the late post-classic period, however, when the refinements and artificialities, not only of Asiatic-Greek, but of Asiatic music had permeated the whole being of the art, certain composers, the *futurists* of their time, did apparently break the rule of the cadence, though not in the manner in which we find it broken in the forgeries. That is, they permitted a Dorian melody to close on a tone lying a semitone below the inferior dominant. This usage is illustrated in the second part of the melody to Ritual Hymn A:



The mode is clearly Dorian chromatic, with the close indicated in the diagram. Yet the f-sharp,—an example of the futurist tendencies mentioned by Aristoxenus, permitting alteration even of the notes bounding a tetrachord,—serves as a leading-tone to the inferior dominant. This is evident from the phrase



so strangely modern in its effect. Only to Greek ears, there was equal satisfaction in having a leading-tone with a retrogressive as well as a progressive tendency. Such a leading-tone might follow, as well as precede the tone to which it tended:



In this place, it serves as the *de facto* final tone of the cadence, yet without any violation of the rule of melody, since it serves, as it were, to throw back the attention all the more forcibly to the true closing note, that is, the inferior dominant.

There was also another requirement of good melodic structure, observed by all the best composers, namely, that the melody was to revert frequently to the tonic,—even more so than to any other tone. We may observe, from the examples already cited, especially the Aidin Epitaph, how generally this rule was followed. Let us examine, also, the Ashmunen fragment of the Orestes-music:





In the papyrus, a sign which does not stand for a musical note, marks the close of a rhythmical phrase. The range of tones is:



wherefore we conclude that the mode is Dorian chromatic. There are two instances of the Dorian cadence, the clearest in the third phrase:



It is to be noted also that two phrases begin on the tonic. The effect, as the effect of frequent repetition of the tonic in the melody, was to impress the tonality on the consciousness of the hearer. We are content, as it were, to imagine the presence of the tonic: Greek music, lacking the harmonic development of our own, needed evidently that the tonic be thus frequently repeated.

We shall hereinafter refer to the type of cadence associated with the primary modes, as the *mesotonic* cadence, to signify that as the tonic is the *mese*, or fourth of the scale, the tones which by their order determine the modality, lie in the lower half of the octave. It is clear, from the examples before us, that over a period extending from the year 408 B. C., when the *Orestes* was acted, down to the first century A. D., this mesotonic cadence was characteristic of the primary modes.

### THE SECONDARY MODES

But the resources of the composer were not exhausted with the possibilities of the primary modes alone. In strict composition, tones lying above or below the range of the octave scales were not generally used for Dorian, Phrygian, or Lydian melodies, especially for Dorian. The Ashmunen *Orestes*, it is true, admits the inferior subdominant,—yet, on the other hand, the melody of the Aidin Epitaph is restricted to the compass of the octave. With the secondary modes, however, a larger latitude of free

composition was permitted. That is, not only the order of the intervals in the final cadence, but the actual register of tones employed in a given composition was of importance for the structure and effect of the melody. Technically, the term *tense*, originally applied to the primary modes, but later restricted to the Lydian, was made to signify a type of secondary mode, admitting to the melody, tones lying a fifth above the range of the octave scale. The other type of secondary mode, characterised by tones lying below the range of the octave, was called *relaxed*. We shall here consider the secondary modes known by the names Mixolydian, Ionian, Hypodorian, Hypophrygian, Hypolydian, and Locrian or Hyperphrygian.

The Mixolydian mode, as its name suggests, was not only Asiatic-Greek, but understood by composers to be in reality a kind of artificial structure in which were blended Dorian and Lydian characteristics. Aristoxenus ascribed its invention to Sappho: it was freely used by the Attic poets, especially Euripides, sometimes in the form we shall hereafter describe as the intermodulating Dorian-Mixolydian. We know the sequence of its intervals, from the description of the Mixolydian species of the octave scale, in the Musicography:

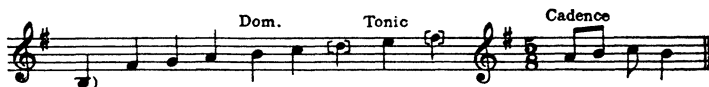


That its true relation to the Dorian was as indicated in the diagram, may easily be shown.

In the music of our Ritual Hymns, are several passages, the structure of which is demonstrably Mixolydian. Of these, the following, from Ritual Hymn B., has suffered least from mutilation of the stone:



The scale of this melody, as indicated in the diagram:



follows the tonal sequence of the Mixolydian species of the octave, while the final cadence is observed to lie within the range of the tones corresponding in pitch value to the Dorian subdominant, and the octave of its tonic. Clearly, then, the intrusion of the high note in the seventh measure, an octave above the Dorian tonic, is to fix, for the hearer, according to the familiar law of good melody, the position of the Mixolydian tonic at this point. The closing note, then, as we should expect it, is a fourth below the tonic, on the Mixolydian inferior dominant, an octave above the Dorian inferior dominant. Moreover, the tonal sequence of the cadence follows a certain stereotyped form, which occurs over and over again in the Mixolydian portions of Hymn B, and as a modulation also in Hymn A, so characteristic, that it may be called the Mixolydian melodic motif:



Evidently the repetition of this melodic motif was a special rule of composition for this mode, as the repetition of the tonic was for the primary modes. And since the Mixolydian tonic was the second highest note of the scale, it is proper to reserve the term *oxytonic* for the Mixolydian cadence.

The intermodulating form of the Dorian-Mixolydian is also well illustrated in the foregoing example. In the third measure, the melody drops a full octave from the Mixolydian inferior dominant to the Dorian. Such a modulation, however, is but transient, for the next step is back again to the Mixolydian. The effect is rather more apparent in the closing measures of the sixth and seventh parts of the melody of Ritual Hymn B, both of which are otherwise Mixolydian:



The relation of the two modes is shown by the accompanying diagram:



Similarly, modulation from the Dorian to the Mixolydian is produced by the upward skip of the octave, as in the following example:



The effect of the Mixolydian, whether or not used in intermodulation with the Dorian, was in the use of the high tones, which imparted to a melody otherwise Dorian the suggestion of Asiatic threnodic music, written in the high-keyed Lydian mode. There was not the same difference of modality between Dorian and Mixolydian that obtained between Dorian and Phrygian, since there was no change in the order of the intervals bounded by tonic and dominant.

The earliest mention of the Ionian mode, a *relaxed* mode, as compared with the Dorian, is by Pratinas of Phlius (c. 510). It had long been the favorite mode of the Lydian-Greek school of erotic and convivial lyric, of which the Teian composers Pythermus and Anacreon were the most noted exponents. Structurally, the scale of the Ionian was nothing but the scale formed of two tetrachords of the form characteristic of the Dorian mode, joined by the method of conjunction:



The original relation of Ionian to Dorian, that is, as a secondary mode to its primary mode, was as given in the diagram. We may note also, that this same scale was rendered by the strings of the Lydian *barbit*, a peculiar form of bass lyre to which Pythermus and Anacreon sang their light lyrics.

We have in the music to Ritual Hymn B, several passages set in a mode, the melodic sequence of which corresponds exactly to the chromatic form of the Ionian scale. Of these, the following is the best:

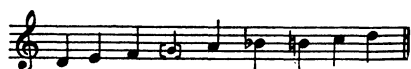


Since, however, the composers of the music to this hymn have treated the Ionian but as a form of the Dorian with a minor super-tonic, they have failed to retain its true character as a relaxed form of the Dorian. We shall, therefore, more correctly speak of it as Pseudo-Ionian.

We may here conveniently discuss also the peculiar melodic structure of the music to the Coda of Ritual Hymn B:



The range of tones in this melody is as follows:



The obtrusiveness of the skip of the major third in several measures shows the composer's intent clearly. That is, he introduced a peculiar form of intermodulating Dorian and Pseudo-Ionian:



In each, the scale is of a double gapped pentatonic type, save that to the Dorian is prefixed the inferior subdominant. As before, the true relation of Dorian and Ionian is lost sight of. The composer, too, sought to show himself an archaist, in that he borrowed the pentatonic gapped scale from the ancient traditional Ritual Arias ascribed to a mythical Asiatic composer, Olympus of Mysia.

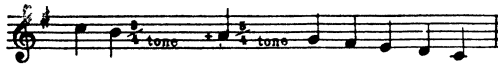
Pratinas, likewise his contemporary Lasus of Hermione, mentions also an Æolian mode. Lasus, in fact wrote a Hymn to Demeter, set to a melody in this mode, which he describes as a bass air. This Æolian mode was identical with the Hypodorian, a relaxed form of the Dorian, extending a full tone below the Ionian:



Similarly, the Hypophrygian and Hypolydian modes were, so to speak, plagal forms of the Phrygian and Lydian:



Yet of the use of these forms of relaxed modes in melodic composition, we are not informed. Only in the case of the Hypolydian, we know that composers followed the example of the Lydian-Greek Polymnestus of Colophon, in associating the mode with the soft diatonic:



## MELODIC COMPOSITION

In dealing with the ways and means of composing music, we are obliged to specify our subject as *melodic composition*. The most significant point of difference between Greek music and our own, is, as we have already intimated, that the development of Greek music followed a melodic, not a harmonic course of evolution. This was a very real difference, of course, yet it was not a difference of the sort to warrant a word of disparaging criticism. Music is a universal language only in the sense that speech is itself universal, an expression of certain parts of the thinking and feeling aspects of human consciousness. It is inevitable that the world's history should show an indefinite number of local varieties of expression,—the musical art of the Greeks was one such form, and our musical art another. Moreover, if the Greek composer had failed to develop the possibilities of harmony, he had far exceeded modern composers in his power of melodic expression, according as his resources were so much greater. A melody, for example, admitting the third part of a tone, was nothing unheard of for the Greeks, yet no composer in our time has ventured to follow Busoni's suggestion that this interval may be made melodically available.

Within the limits of the present article, it is not possible to go much into detail with regard to the historical development of the art of music during the classic period. Certain important matters, may, however, be submitted to the reader's attention.

There were two recognised and well-defined schools of composition, which we may call the Old Classic and the New Classic. The former group of composers wrote in a strict, severe style, long associated with the works of Pindar, Simonides and Æschylus. The chromatic type of melody was not used at all; modulation, involving change of mode or genus, only very sparingly. On the other hand, the New Classic school insisted on the right of the composer to be a creative artist, to express his own individuality in his work, and to establish his own, rather than to follow traditional forms. Composition was free,—any or all genera or modes were at the musician's disposal, and especially, much use was made of modulation. The leading exponents of the New Classic art, were first of all, Lasus, the pioneer, and Philoxenus, Euripides and Timothy, each supreme in his own respective genre, the Dionysiac Choral, the lyric drama, and the citharodic aria. Timothy, in fact, might be called the Greek Debussy. As between the merits of Old Classic and New Classic art, the critics

of ancient times, especially Plato and the comic poets, decided in favor of the former; as we believe, quite unjustly and mistakenly.

Our *corpus* of Greek melody, small as it is, is enough to acquaint us at first hand with the differences between the Old Classic and the New Classic styles. The melody of the Aidin Epitaph, in its charming simplicity cannot but recall the best of the Old Classic style, while the Ashmunen fragment of the *Orestes*, representing Euripides' most mature work, is equally characteristic of the New Classic manner. Moreover, in the music to our Ritual Hymns, we have not only the influence both of the Old and the New Classic schools, but some evidences of the cross-currents in taste which prevailed during the post-classic period, namely futurism, so to speak, and archaism.

Before proceeding to give an analysis of the Ritual Hymns, let us consider the important subject of modulation.

In our music, modulation is not nearly as extensive a means to the adornment of a piece as it was in Greek music, for the simple reason that our melodic resources are not so great. That is, it involves for us change of key, and to the extent of shifts from major to minor, or vice versa, change of mode also. A Greek composer, however, had a choice not only of fifteen keys for intermodulation, but had three genera and a large number of modes as well. Hence the musicography distinguishes modulation by genus, mode and key, as embracing the less complicated forms. We have already dealt with the intermodulating Dorian Mixolydian,—we may here add certain examples of the other forms.

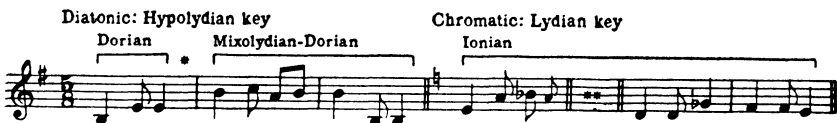
*Change of Genus:*



*Change of Mode:*



*Change of Key,—also of Genus and Mode:*



Yet a fourth kind of modulation involved a change in the whole plan of composition,—that is, of genus, mode and key.

### STRUCTURAL ANALYSIS OF THE MUSIC OF RITUAL HYMNS A AND B

#### RITUAL HYMN A

The music of this hymn, which is set in the Phrygian key, is of three parts:

1. Diatonic,—measures 1-28,
2. Chromatic,—measures 29-57,
3. Diatonic,—measures 58, ff.

Each of these parts may be submitted to a detailed examination.

##### Part 1,—measures 1-28



The first seven measures are fragmentary,—yet the Dorian mode is indicated. We have therefore restored the cadence in accordance with such tonal suggestion. The succeeding phrase, 8-13, is Lydian. In 14-28, the final cadence is Dorian, while modulations to the Pseudo-Ionian, in 24, and to the Mixolydian in 21-22, are evident.

##### Part 2,—measures 29-57





This part opens with a sudden and abrupt change from diatonic to chromatic. The mode is Mixolydian in 29-31, shifting with a change of key as well, to Dorian in 32-4, and back again to the Mixolydian in 35. A cadence, with change of key, and of mode to the Dorian, occurs in 37. A new phrase begins in the latter part of 37, with a cadence in 43,—the mode being Dorian, save for a transient modulation to Pseudo-Ionian in 37. This is followed by a third phrase, at first Dorian, changing in 45 to Phrygian diatonic, returning in 46 to Dorian, with cadence at 47. The final phrase, 48-57, is an unusually elaborate and beautiful example of the Dorian chromatic, with the peculiar close on the leading-tone to the inferior dominant.

Part 3,—measures 58, ff



The upward skip of the octave in 58, indicates a quick shift from the Dorian to the Mixolydian, the persistence of which is shown

by the range of the melody in the upper tetrachord. In 78, we have the melodic motif, and in 79, a transient modulation to the Dorian, with the typical Mixolydian cadence in 83. The musical appropriateness of this mode, which was intended to convey a suggestion of excitement and tense emotional strain, is particularly to be noted, as the lines tell of the conflict of Apollo and the Python.

### RITUAL HYMN B

Of this hymn, there are extant ten parts,—the first seven more or less complete and amenable to analysis, the next two quite defective. The tenth part, or Coda, is also much mutilated.

#### Part 1,—measures 1-30



The key is Lydian, corresponding to our *natural* key, and the mode Dorian, with transient modulation to Pseudo-Ionian in 11, 12, 25. One special feature is the frequency of *melodic tension*, the consecutive repetition of a note, as in 20-21.

#### Part 2,—31-50





With a downward skip of a fourth, the key changes from Lydian to Hypolydian. The mode, at first Dorian, shifts suddenly in 31 to the Mixolydian, with a transient modulation back to the Dorian in 39. By the frequent iteration of the Mixolydian melodic motif



retained in the final cadence, the modality of this part is made quite evident.

Part 3,—51-60



This part, too, is in the Mixolydian mode, and the Hypolydian key. A transient modulation to the Dorian occurs in 50. In 56, the characteristic tonic of the Mixolydian is introduced to stabilise the melody.

Part 4,—61-75



The change of key to the Lydian would indicate a rise of a fourth, if the melody of the preceding part had ended with a Dorian cadence. Yet since the cadence was Mixolydian, with the closing note on the octave of the Dorian inferior dominant, the change of key, despite the fact that the Lydian lies a fourth above the

Hypolydian, is effected by a downward step. For the first time, the chromatic genus is introduced, set to the Pseudo-Ionian.

Part 5,—76-96



In this part, the key changes back to Hypolydian, while the presence of the melodic motif in 68, or with variations in 83-4, 92-3, shows that the mode is Mixolydian. The final cadence is Mixolydian-Dorian.

Part 6,—97-105



A return to the Mixolydian is shown by the opening note, and by the melodic motif. The cadence is again Mixolydian-Dorian.

Part 7,—106-118



The key changes from Hypolydian to Lydian, with the upward step of the fourth. Again the genus is chromatic, the mode Pseudo-Ionian.

## Part 8,—119 ff



Once more, key and mode change, to Hypolydian and Mixolydian, —the latter with a transient Dorian note of introduction.

## Part 9,—I-IX



This part is so defective that little can be made out of it. Yet the modality is clearly Mixolydian, as the presence of the melodic motif indicates. The fact that the motif is set a full fourth higher than in other Mixolydian parts of the music, establishes the fact that the key is Lydian.

## Part 10,—Coda : 1-14



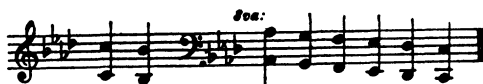
The key is still Lydian,—the mode a peculiar form of intermodulating pentatonic Dorian and Pseudo-Ionian, as we have already shown. We may add that the rhythm, in heptuple time, illustrates

the composer's futurist tendencies, for Aristoxenus declares heptuple rhythm impossible.

### ANTIPHONAL MELODY

The word *antiphony* had for the Greeks the special connotation of the interval of the octave and the degree of consonance associated with it. It was a musician's term, for which *antiphthong*, *antipsalm* and *magadism* were synonyms. The antiphonal melody was the simplest and, to the Greeks, the only possible form of part-singing, that is to say, an arrangement of parts in parallel octaves. Such was the effect of a choral song, rendered by a mixed choir of men and boys.

By means of a simple mechanical device called *magadis*, evidently a sort of detachable bridge, it was possible to render an antiphonal melody on any instrument of the lyre or harp type. The usage, as well as the name, originated among the Semitised Lydians of the Neo-Lydian empire in the sixth century B. C., from whom, in turn, the Lydian-Greek composers Alcman of Sardis and Anacreon of Teus derived both. Anacreon sang his light lyrics of women and wine to the accompaniment of a ten-stringed Lydian psaltery, which, when provided with the *magadis*, had its compass virtually doubled. We may illustrate the effect by a diagram of the scale of the octochordal lyre:



With Anacreon, who was one of the court poets of the Pisistratid aristocracy, the *magadis* and the Lydian method of singing in parallel octaves came to Athens. Long after the use of the device had been given up, when no one knew whether the *magadis* was a musical instrument or not, the name was applied to the antiphonal chant. Thus *magadism* meant for the musicographers, the method of singing a melody written for a mixed choir.

Not only vocal, but instrumental music was rendered in parallel octaves. We know that the Semitised Lydians, when the Greeks first came in contact with them, played instrumental duets on the large triangular Phrygian harp and the Lydian psaltery. According to one tradition, the Lesbian professionals composed such duets for bass lyre and psaltery. In the post-classic period antiphonal duets of pipes and strings were sometimes performed.

## INSTRUMENTAL ACCOMPANIMENT

Two forms of instrumental accompaniment were known to the Greeks, namely, the homophonic and the heterophonic.

Homophonic accompaniment, that is, when the accompanist did but play the air on his instrument, while the voices rendered it in unison, was believed to have been a very ancient usage. In the classic period, it was revived for the dramatic solo song, as this genre was developed by Euripides. For this purpose, the lyre was not used, as it was held that voice and strings did not blend with sufficient smoothness to produce the best artistic effect. Instead, the pipes were employed, on the theory that as the tones of pipes and voice were both produced by air, the blending necessary for a satisfactory accompaniment was the more readily produced.

Technically, from the point of view of the musicographers, who, beginning with Aristoxenus, wrote on instrumentation, the voice was a musical instrument,—in fact, the perfect instrument. From an early time, certain composers had used the voice for accompaniment, in place of lyre or pipes. Thus the so-called *aulodic aria* was a pipe solo with an accompaniment rendered by the choir. In this case, the choir sang the lines of a hymn. Yet Archilochus (c. 648 B. C.), and following him also Æschylus and Philoxenus, wrote melodies to be accompanied by vocal imitations of the tones of the lyre,—such imitations consisting of the repetition of onomatopoetic syllables or words, *tenella*, *phlattothrat*, *thretanelo*. Aristophanes, in the *Frogs*, makes Euripides, before Dionysus as musical critic, render a burlesque of Æschylean music:

EURIPIDES: (Sings) “Ho, for the twin-throned might of Hellas’ youth,—

Sing *phlatto-thrat*, sing *phlatto-thrat*!

DIONYSUS: Sing flat o’ thrat! How’s that? A tune you stole In Marathon, some rope-walk chanty, eh?”

The allusion to the rope-walk chanty lets us know that the folk-songs of the ancients had their unintelligible refrains. Such accompaniments were called *teretisms*, that is, “twitterings.” Sometimes such teretisms were made to imitate the accompaniment by pipes, more correctly known as the *niglare*. The use of the *niglare*, which must have been some sort of whistling or yodeling, was originated by Lamprus, the teacher of Sophocles, and extensively employed by Timothy of Miletus.

The expression *subordinate* was technically applied to the second, or heterophonic form of accompaniment. This accompani-

ment, except in the form of a drone-bass, was invariably pitched higher than the melody. This usage constitutes another of the important points of difference between Greek music and our own. It is briefly illustrated by Aristoxenus, whose statements may be diagrammatically rendered:



We have an example of heterophonic accompaniment in the Ashmunen papyrus of the Orestes:



The use of heterophonic accompaniment in the form of a drone-bass was but sparing. It is known that it was characteristic of music performed on the curious Phrygian double-pipe, of chanter and drone. Moreover, since the Greeks had the bagpipe, they must have felt that the drone-bass was the peculiarity which made the instrument seem always exotic. We may take the word of Aristophanes in the *Acharnians*, that the Greeks of his time had little taste for the bagpipe:

BEOTIAN: Ye Theban laddies, a' o' ye, coom heir,  
Wi' pipes o' bane, blaw yon wee doggie's hide!  
DICÆOPOLIS: *Dog-gone ye!* Hornets, buzzing round my door,  
Bumble-bee pipers, Chaeris' own, to swarm  
With me? Where did they come from, dash their  
eyes!

Chaeris was one of the worst of pipers, so that the association of his name with the music of the bagpipes voiced dislike for the instrument even more emphatically than the curses of the enraged citizen whose sleep had been murdered by the street musicians.

While we are considering instrumental accompaniment, a word or two on the subject of musical instruments will not be out of place.

The characteristic instrument of the Greeks (the only one, in fact, which Plato thought a Greek should ever play upon) was the lyre. Yet it was not an invention of the Greeks, but a relic of the pre-Hellenic Minoan civilisation. The Minoans, in turn, had derived it from Egypt, where, too, it was exotic, though imported by Semitic Bedouins as early as the year 2200 B. C.

Ultimately, the lyre came from China. In its most familiar form it had eight strings, rendering the Dorian octochord. Sometimes however, it was made with but seven,—leaving out the mediant of the scale:



We have already mentioned the heptachordal bass lyre, or *barbit* of the Lydians. Beside these forms, there was also the *cithar* of the Asiatic-Greek professional, introduced into Athens by Phrynis of Mitylene in the year 445 B. C. The cithar was a larger and more elaborate instrument than the ordinary lyre, much more difficult to play upon. Phrynis used one with ten strings, while Timothy of Miletus tells us that his cithar had eleven.

No other stringed instrument ever enjoyed good repute among the Greeks. The Lydian psaltery, introduced by Anacreon, was too much associated with Anacreontic morals, while the case of the harp was even worse. Four kinds of harps were known in the classic and post-classic periods. There was the large triangular harp popularly known as *Phrygian*. A smaller instrument of similar shape but of different construction was called the *sambuke*. The *nabla* of the Syrians was identical with the Psalmist's instrument with ten strings. Lastly, the *phoenix* was nothing but the curious boat-shaped harp of the Egyptians. All these had been introduced into Greece by professionals from the East, who began to come in soon after the Persian Wars, and continued to minister to the vulgar taste of the nouveaux riches with their loose songs and worse dances. To decent people everywhere, the manners of these professionals were beyond endurance, so much so that no form of the harp could ever become popular except with a limited class. The same was true of the lute, introduced from Asia in the fourth century B. C.

Of wind instruments, the Greeks had many different forms, exclusive of the horn and trumpet, and generically distinguished by the names *syrinx* and *aulos*. The former were of the true flute type, including the familiar Pan's pipes, and the Egyptian fipple-flute. There is no evidence that the Greeks had any instrument corresponding to our cross-flute or piccolo. All other pipes, generically called *aulos*, were provided with reeds, and generally played in pairs. The Lydian pipes, for instance, the form commonly used for accompaniment of choral odes and solo songs on the Attic stage, had two straight pipes of equal length, fitted

with a curious detachable muzzle-like mouthpiece. In the post-classic period, however, two forms of single pipe, used respectively in the rituals of Isis and Osiris, were introduced into Athens. Of these, the pipe of the Isiac mysteries was played upon in the same manner as our flute, but had its reed inserted in the lateral mouthpiece. The other form of Egyptian reed-pipe, sometimes represented as of conical bore, may have been an oboe.

Nothing better illustrates the extent to which the Greeks, in developing a musical art of their own, were indebted to older and non-Hellenic civilisation, than the names of musical instruments. The Asiatic harp, which every Greek of the classical period knew was exotic, bears the good Greek name *trigon*,—that is, “triangle.” Otherwise, the name of every musical instrument, including the five names of the lyre, is a foreign word.

#### NOTATION

As early as the time of Aristoxenus, the Greeks had a simple system of diastematic notation. This method, however, was little used, and in time entirely supplanted by a tonic notation, in which all existing scores of Greek music are written. This tonic notation, the basis of which was the twenty-four letters of the Greek alphabet, has been quite incorrectly assumed to be very ancient. The earliest record of its use, however, is in the scores of the Delphic Ritual Hymns, engraved on stone in 138–128 B. C. We have besides, the libretti of the Hymns of Aristonous, engraved on stone at Delphi in 279 B. C., which are not provided with a score of the music. Now this Aristonous was the most distinguished composer of his time, highly honored by the Delphians. It is inconceivable, therefore, if the tonic notation had been in use at the time, that the music of his hymns should not have been preserved as well as the lines. We must conclude, therefore, that as late as 279 B. C., the tonic notation had not been invented. This conclusion is strongly reinforced by the fact that Aristoxenus, who was a contemporary of Aristonous, knows nothing of the tonic notation.

From the testimony of the musicographers Aristides, Gaudentius and Alypius, we learn that the two forms in which the tonic notation has come down to us were distinguished by usage as *vocal* and *instrumental*. With these statements, the testimony of our scores agrees. Thus, the melodies to the Orestes, to the Aidin Epitaph, and to Ritual Hymn A, are notated in the vocal notation. In the Orestes score, certain signs of the instrumental

series are used to mark the close of a phrase, or to notate accompaniment. Since Ritual Hymn B was in reality an instrumental aria with a vocal accompaniment consisting of the lines of the hymn, it was correctly notated in the instrumental signs.

The complete roster of characters for both instrumental and vocal notation is as follows:

1. Vocal:  $\mathcal{U}, \mathcal{A}', \mathcal{I}', \mathcal{Z}', \mathcal{H}', \mathcal{I}', \mathcal{K}', \mathcal{A}', \mathcal{M}', \mathcal{N}', \mathcal{E}', \mathcal{O}', \mathcal{L}, \mathcal{J}, \mathcal{Q}, *, \mathcal{A}, \mathcal{U}, \mathcal{A}, \mathcal{B}, \mathcal{I}, \mathcal{A}, \mathcal{E}, \mathcal{Z}, \mathcal{H}, \mathcal{O}, \mathcal{I}, \mathcal{K}, \mathcal{A}, \mathcal{M}, \mathcal{N}, \mathcal{E}, \mathcal{O}, \mathcal{I}, \mathcal{P}, \mathcal{C}, \mathcal{T}, \mathcal{I}, \mathcal{F}, \mathcal{X}, \mathcal{P}, \mathcal{Q}, \mathcal{V}, \mathcal{R}, \mathcal{I}, \mathcal{V}, \mathcal{F}, \mathcal{Z}, \mathcal{H}, \mathcal{I}, \mathcal{C}, \mathcal{K}, \mathcal{V}, \mathcal{W}, \mathcal{N}, \mathcal{H}, \mathcal{Q}, \mathcal{I}, \mathcal{B}, \mathcal{Z}, \mathcal{I}, \mathcal{J}, \mathcal{H}, \mathcal{S}.$

2. Instrumental: Γ, J, I, E, Ε, Θ, Ζ, λ, Α, Η, Η, Η, Κ, κ, Ξ, Ν, Ι, Ι, C,  
C, O, T, Τ, Δ, Δ, F, F, Φ, Η, Η, Η, Δ, V, V, M, Λ, λ, Π, Π, Π, Ε, Σ, 3,  
T, L, J, τ, P, ς, υ, γ, K', K', X', N', V, Τ', Δ', Δ, Δ', V', V', Z'

Let us study these in detail, in order that the derivation of all the signs from the letters of the Greek alphabet

U P X Φ L L Z J H O E N M V K I Θ H Z Z E ∇ L B V

may be made clear.

Since the number of tones for which symbols were required, far exceeded the number of letters in the alphabet, it was necessary to use, not only the letters in normal form and position, but also to resort to the devices of alteration of form or position, or both, and to the use of diacritical signs. A different method was employed for each kind of notation, as we shall show. For the present, however, we are concerned only with the forms of the characters.

## I. VOCAL NOTATION

In this system, the tones lying within the range of the so-called Dorian decachord, were notated by the use of the letters in normal position, as indicated in the diagram.



The reason why the Greeks employed what seems to us an unnecessarily large number of signs will be considered presently. All other tones, both above and below the range of the decachord,

were notated by signs which were nothing but altered forms of the same familiar Greek letters. We may herewith summarise the vocal characters, as distributed to their respective classes:

1. Normal position:

A B Γ Δ E Z H Θ I K Λ M N Ξ O Π P Σ T T Φ X Ψ Ω

2. Reversed position:

1, — that is, γ.

3. Recumbent position:

ι, ϰ, ϩ, ϰ, — that is, ι, κ, ξ, φ.

4. Recumbent reversed position:

τ, υ, — that is, τ, υ.

5. Inverted position:

ϐ, ϑ, ϕ, ϗ, N, II, O, J, J, ϰ, U, — that is, α, δ, λ, μ, ν, π, σ, τ, υ, ψ, ω.

6. Mutilated:

R, F, Z, H, — that is, β, ε, ζ, η.

7. Mutilated — recumbent:

ϰ, ϰ, — that is, θ, φ.

8. Doubled:

3, — that is, σ.

9. With diacritical sign:

Q, \*, — that is, ο, χ.

10. With the sign of the Octave:

U', A', Γ', Z', H', I', K', A', M', N', Ξ', O'.

The characters notated with the sign of the octave (') were used to transcribe notes lying an octave above the notes represented by the corresponding signs undistinguished by the diacritical mark.

## II. INSTRUMENTAL NOTATION

The instrumental notation, for which a hoary antiquity has quite without warrant been assumed, was invented somewhat later than the vocal, and derived directly from it. It makes use of nineteen characters:

Γ, E, Z, H, K, N, C, T, F, H, <, =, ξ, ϰ, ϭ, M, Π, ϰ, ϰ.

These characters were chosen quite at random from the entire series of vocal signs,—nine of them without change of form or position,—the rest, however, subjected to some necessary alteration. Even at a glance, the reader could not fail to identify all but one or two of them. For the sake of added clearness, however, we add the accompanying diagram:

1. Unaltered signs,—including three with the signs of the octave:

 $\Gamma, E, Z, H, K, N, C, T, F, Z', K', N'.$ 

**2. Altered signs:**

1. Recumbent:  $\Delta$ ,  $\Pi$ ,  $\Upsilon$ ,  $\varepsilon$ , — that is,  $\Lambda$ ,  $\Pi$ ,  $\Gamma$ ,  $\gamma$ .

2. Reversed: H, 3, P, — that is, H, 3, P.

3. Mutilated: M, — that is, M.

4. Mutilated — reversed:  $\Upsilon$ ,  $\Gamma$ , — that is,  $\Delta$ ,  $\Omega$ .

The tonic notation was originally devised for the notation only of chromatic melodies, a fact which constituted further proof of its late origin, for the vogue of chromatic music was only beginning in the time of Aristoxenus. Yet it was not the invention of a musician, but of a musicologist, who set it to render fifteen transpositions of the so-called Complete Scale of Aristoxenus.



This Complete Scale, comprising the range of the average voice, and known as the Dorian or standard Key, was an expansion of the earlier scales of the Greek lyres,—the heptachord of the *Lydian barbit*, or bass lyre, the octochord of the amateur's instrument, and the scales of the *cithar* of the professionals, having nine, ten, or eleven strings.

**Complete Scale: Diatonic**



### Barbit. Scale

## Octochord



## Enneachord

**Decachord: chromatic**



**Complete Scale: Chromatic**

Hendecachord chromatic



We have already observed that in the notation of the tones lying within the range of the decachord, the Greek musicologists used what seemed an unnecessarily large number of signs. This usage, which extended throughout the system, was due to an interpretation of the scale as formed of a series of overlapping tetrachords:



The practical effect of such an interpretation was the distribution of the signs in groups of three, as required for the notation of the so-called pycna, or chromatic sequences of semitones.

The distribution of characters for the notation of these chromatic sequences was not according to the same method for both kinds of notation. Thus, according to the vocal notation, sequences of tones were transcribed by complete or partial alphabetic sequences of signs. Complete alphabetic sequences were used wherever possible,—



otherwise, partial sequences, treated as if combined of groups of two complete sequences, in such a way that the resulting partial sequence included the first and third signs of the first sequence, and the first of the second:



In the instrumental notation, however, since the characters did not form an alphabetic sequence, a different method was necessary. Thus, musicians used sequences of form and position. This is evident from the notation of the tones lying within the range of the decachord:



Only the following signs were usable in the three positions,—

Γ, Ε, Κ, C, F, Η, <, Π, ξ, Ϝ, ~.

forming the groups:

Γ Δ Τ, Ε Ϝ Ϝ, Κ ξ ξ, C C C, F Ϝ Ϝ, Η Ϝ Ϝ, < V >, Π Π Π, ξ ω 3, Ϝ Ϝ Ϝ, ~ 3 ~.

In the case of Z, N, M, parts only of each sign were used to fill out the sequences, while in the case of T, changes in form and position were necessary. Lastly, H was used with a diacritical mark.

Z, λ, λ, N / \, M, λ, λ, T < Δ, H H H

Such sequences of form and position of the same sign, corresponded tone for tone to the complete alphabetic sequences of the vocal notation. Otherwise, in the instrumental notation, those groups of semitones, corresponding in pitch-value to those notated in vocal notation by partial alphabetic sequences, were notated by groups of signs similarly made up of pairs of contiguous sequences. The accompanying diagrams will render this statement quite clear.



Though the tonic notation was devised for transcription of chromatic melodies, it was easily adapted for the notation also of



In the handbook of the musicographer Alypius is a diagram of the notation of the Aristoxenean Complete Scale in its fifteen transpositions. One of these, the Dorian, or standard Key, corresponded to the range of the average voice. Since we know the intervals of the scale, as described in the musicography, and further, that Aristoxenus accepted the principle of equal intonation, we can determine exactly the interval bounded by any two notes of a vocal score. Let us take the melody of the Aidin Epitaph.

$\begin{array}{ccccccc} \text{C} & \bar{\text{Z}} & \bar{\text{Z}} & \text{K} & \text{I} & \text{Z} & \bar{\text{I}} \\ \text{ΟΣΟΝ} & \text{ΖΗΣ} & \text{ΦΑΙΝΟΤ} & & & & \\ \\ \bar{\text{K}} & \text{I} & \dot{\text{Z}} & \text{I} & \text{K} & \text{O} & \bar{\text{C}} & \text{O} \dot{\text{Φ}} \\ \text{ΜΗΔΕΝ} & \text{ΟΛΩΣ} & \text{ΣΤ} & \text{ΑΤΠΟΤ} & & & & \\ \\ \text{C} & \text{K} & \text{Z} & \text{I} & \dot{\text{K}} & \text{I} & \bar{\text{C}} & \text{O} \dot{\text{Φ}} \\ \text{ΠΡΟΣ} & \text{ΟΛΙΓΟΝ} & \text{ΕΣΤΙ} & \text{ΤΟ} & \text{ΖΗΝ} & & & \\ \\ \text{C} & \text{K} & \text{O} & \text{I} & \dot{\text{Z}} & \text{K} & \text{C} & \bar{\text{C}} & \text{C} \dot{\text{X}} \dot{\text{T}} \\ \text{ΤΟ} & \text{ΤΕΛΟΣ} & \text{Ο} & \text{ΧΡΟΝΟΣ} & \text{ΑΠΑΙΤΕΙ} & & & & \end{array}$

The key in which the music is written is found by inspection of the diagram of Alypius, to be the Ionian. In the accompanying diagram, the signs — and ∪ are here added, to denote respectively, tone and semitone.

$\text{K} - \text{H} \cup \text{Z} - \text{T} - \text{X} \cup \text{Φ} - \text{C} - \text{O} - \text{K} \cup \text{I} - \text{Z} - \text{A} \cup \text{Ω} - \text{Θ} - \text{O}'$

The interval between C and Z is thus seen to be a fifth in ascending order, that between Z and K, a minor third in descending order, and so on. It is necessary only to assume a pitch-value for C, in order to transcribe the whole score.

In making this assumption, we have been guided by the statement of Aristides, that the Dorian Key comprises the tones within the range of the average voice. We assume, then, for the lowest tone of the lowest Key, the Hypodorian, a value of contrabass C. The range of the Dorian will then be that of the average baritone voice.



We may therefore assure ourselves of making but the least possible

transposition of the music out of the original key in which it was composed and sung.

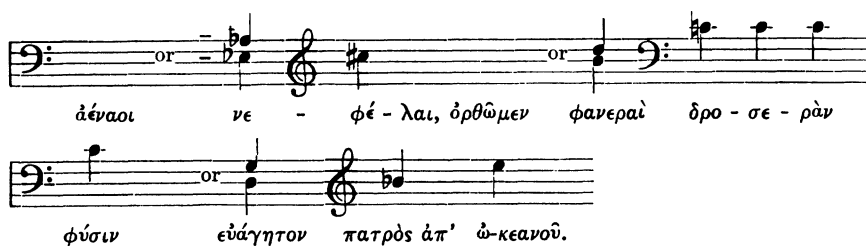


### FORGERIES OF GREEK MUSIC

Already in the post-classic period, attempts were made to palm off spurious antiques. Heraclides, an eccentric philosopher and bookworm, possessed of much knowledge and more conceit, wrote tragedies in the name of the dimly historical Thespis. Some lines of these tragedies are extant. As he was well informed on music and musicians of the Old Classic school, we may suppose that he was able to deceive some of his audience. Yet Spintharus, the father of Aristoxenus, finally exposed him for the liar and forger that he was.

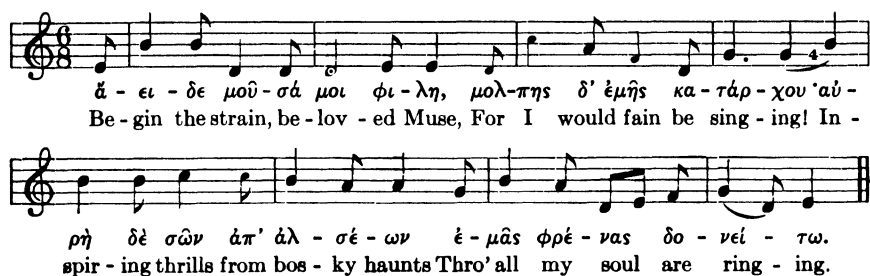
We have seven forgeries of Greek music, written in the tonic notation, and composed at some time between the fourth and the twelfth centuries of our era, by persons quite unacquainted with the grounds and rules of Greek melodics and melodic composition. Of these, one is a melody to the opening lines of Pindar's First Pythian Ode, published by Father Athanasius Kircher in 1649. Another, set to the opening lines of the Homeric Hymn to Demeter, was printed in 1724-6 by a noted Italian composer of church music, Benedetto Marcello. More famous, however, than either of these, are the four Hymns published in 1581 by Vincenzo Galilei, the father of the astronomer Galileo. These Hymns, addressed respectively to the Muse, to Calliope, to the Sun-God, and to Nemesis, were ascribed by Burette, in 1729, to Mesomedes, the court poet of Hadrian. Since, however, Burette's evidence is most unacceptably inconclusive, we cannot admit the authorship of Mesomedes, and have therefore designated the author as Pseudo-Mesomedes, in recognition of the fact that the Hymns have been so long associated with the name of Mesomedes. Lastly, in a late manuscript of the *Clouds* of Aristophanes two lines of the

play are arranged with music notes, the interpretation of which renders the following absurd result:



The one characteristic feature of these spurious melodies which conclusively stamps them as forgeries, is their pentachordal structure.

We have observed that in the construction of all melody, the Greek composer was directed by the interval of the fourth,—or, in other words, the tetrachord was the bed-rock of melodic composition. The unanimous testimony of scores and of musicography is to this effect, and establishes, as an inviolable rule, the close on the inferior dominant. There is not the slightest suggestion anywhere in the musicography, nor the least intimation in our scores of the Aidin Epitaph, the Ashmunen *Orestes*, and the two Ritual Hymns, that a close on the tonic was permissible under any circumstances. Yet in all of the forgeries under consideration,—excepting only the Pseudo-Aristophanes, which is not a melody at all,—the structure is distinctly pentachordal, with the close on the tonic. We may illustrate this fact with the melody to Pseudo-Mesomedes' Hymn to the Muse:



If now we place side by side, the closing phrases of the melody to the Aidin Epitaph, and one of the Dorian-Mixolydian passages of Ritual Hymn B, with those of the first three airs of Pseudo-Meso-

medes, the fundamental difference between genuine and spurious Greek music will be clear:

Aidin Epitaph



Ritual Hymn B, 94-6.



To the Muse. To Calliope.



To the Sun.



There is also important evidence against these spurious melodies to be derived from examination of the notation. That is to say, the melodies of the Kircher-Pindar, the Marcello-Homer, and the Hymn to Nemesis, as well as the Pseudo-Aristophanes, are notated in a mixed notation, the characters of which are taken from both vocal and instrumental diagrams. In the case of the Marcello-Homer, we have two scores of the melody, the one notated in vocal, the other in instrumental signs. The melody of the Kircher-Pindar is transcribed in part by the vocal, in part by the instrumental signs. Yet the music to Pseudo-Mesomedes' Hymn to Nemesis, as we have it in the score, shows beyond a doubt that the composer was a mere forger of antiques, who knew the Greek notation only through the diagram of Alypius. In the eighteenth line of the Hymn, he once uses, instead of the vocal sign, the instrumental character. This was a natural error, since vocal and instrumental signs were written in the diagram in parallel columns. Our score truthfully records the *false note*, convicting the Pseudo-Mesomedes of forgery.

In the Kircher-Pindar, the case is even worse. Not only has the forger failed to observe the distinction between the two kinds of notation, but he has shown that he knew no more of the Greek language than he did of Greek melodies. That is, he has made his melody to end, not only before he reached the close of a stanza, but in the *middle of an unfinished sentence*. This is shown by the score:

Ὡ Ὡ Γ Θ Ι Ὡ Γ Θ Ι Ὡ Γ Θ Ι Μ Ι Θ Ι  
 Μ Ι Θ Γ Θ Γ Ὡ Γ Θ Ι Γ Θ Ι Θ Γ Μ Ι Μ  
 V V < V N Z N V < Z N V V < Ί Ί ∪ Ί  
 Ί < Ί V N Z V < < V V < Ί <  
 ∪ V Ί N Z N V < Ί < Ί

Tonic      Dominant      Ecclesiastical Dorian

Dominant  
 Tonic

The pentachordal structure of this melody, with its close on the tonic, may be compared with the tetrachordal structure of one of the Dorian melodies in Ritual Hymn A.

KIRCHER-PINDAR

Dominant  
 Tonic

RITUAL HYMN A

Tonic  
 Dominant

As the latter is in the Greek Dorian, with the required close on the inferior dominant, the melody of the Kircher-Pindar is in the ecclesiastical Dorian, having a tonic close.